A-3
over all 26.7
(New) The method of claim 25, wherein X represents a straight or a branched divalent alkyl chain having from 8 to 12 carbon atoms.
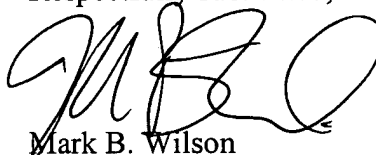
REMARKS

The specification has been amended to recite the priority data, to add an Abstract, to amend claims 2-24, and to add new claims 25-27. The filing fee has been calculated after amendment of the claims by the preliminary amendment

For the convenience of the Examiner, Appendix A is attached hereto containing a marked-up version of the claim amendments, and Appendix B is attached here containing a clean set of the pending claims.

Should any additional fees under 37 C.F.R. §§ 1.16 to 1.21 be required, the Commissioner is hereby authorized to deduct said fees from Fulbright & Jaworski Deposit Account No. 50-1212/10102019/MBW.

Respectfully submitted,

Mark B. Wilson
Reg. No. 37,259
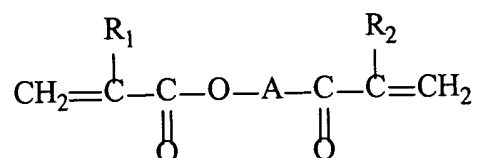Attorney for Applicant

FULBRIGHT & JAWORSKI L.L.P.
600 Congress Avenue, Suite 2400
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512.536.3035

Date: April 2, 2001

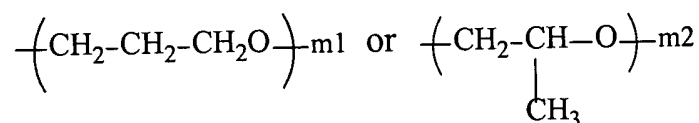1.   A polymerized monomeric composition comprising: from 35 to 70 parts by weight of one or more monomers (1) of formula:

$$CH_2=\overset{\overset{\displaystyle R_1}{|}}{C}-\underset{\underset{\displaystyle O}{\|}}{C}-O-A-\underset{\underset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle R_2}{|}}{C}=CH_2$$

wherein

R_1 and R_2 represent H or CH_3,

A is a divalent moiety of formula:

$$-\left(CH_2\text{-}CH_2\text{-}CH_2O\right)_{m1} \quad or \quad -\left(CH_2\text{-}\underset{\underset{\displaystyle CH_3}{|}}{CH}-O\right)_{m2}$$

ml and m2 each are an integer in the range of 4 to 20,

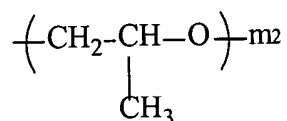from 5 to 50 parts by weight of a monomer (II) comprising at least a urethane unit and at least two (meth)acrylate functions, and

from 5 to 40 parts by weight of a monomer (III) with a high Abbe number and comprising one or more methacrylate functions, the total of the monomers (I), (II), and (III) representing 100 parts by weight.

2.   The composition of claim 1, characterized in that, in the monomer formula (I), said divalent A represents:

$$-\left(CH_2\text{-}\underset{\underset{\displaystyle CH_3}{|}}{CH}-O\right)_{m2}$$

m2 being defined in claim 1.

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3.   The composition of claim 1, further defined as comprising from 40 to 60 parts by weight of monomers (I) and m_1 and m_2 are integers from 5 to 10.

4.   The composition of claim 1, wherein the monomer (II) is a urethane di(meth)acrylate oligomer.

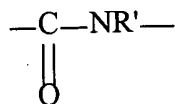5.   The composition of claim 4, wherein the urethane di(meth)acrylate oligomer is further defined as an alphatic polyester.

6.   The composition of claim 1, wherein the monomer (II) has the formula:
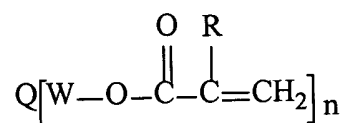
$$Q \left[W-O-\overset{\overset{\displaystyle O}{\|}}{C}-\overset{\overset{\displaystyle R}{|}}{C}=CH_2 \right]_n$$

wherein:

Q is a moiety of a valence n, with a straight, branched or cyclic structure, comprising at least two units of formula:

$$-\overset{\overset{\displaystyle }{}}{C}-NR'-$$
$$\underset{O}{\overset{\|}{}}$$

W is a divalent alkyl moiety, with a straight or branched structure, containing from 1 to 5 carbon atoms,
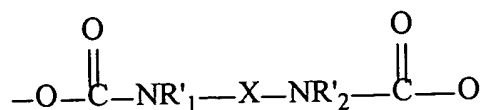
n varies from 2 to 4,

R represents H or CH_3, and
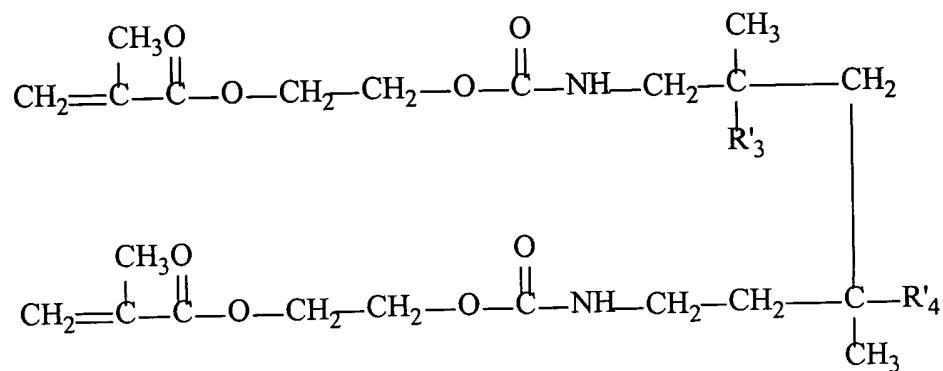
R^1 represents H or a valence link.

7.   The composition of claim 6, wherein W represents the $-CH_2CH_2-$ moiety.

8.   The composition of claim 6, wherein, in the monomer formula (II), the Q moiety is a divalent moiety having the following formula:
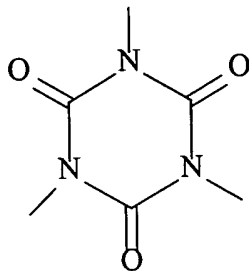
$$-O-\overset{\displaystyle O}{\overset{\|}{C}}-NR'_1-X-NR'_2-\overset{\displaystyle O}{\overset{\|}{C}}-O-$$

wherein X represents a straight or a branched divalent alkyl chain [having from 1 to 5 carbon atoms, preferably from 8 to 12 carbon atoms], and R'_1 and R'_2 independent from one another represent H or CH_2.

9.   The composition of claim 8, wherein the monomer (II) has the following formula:
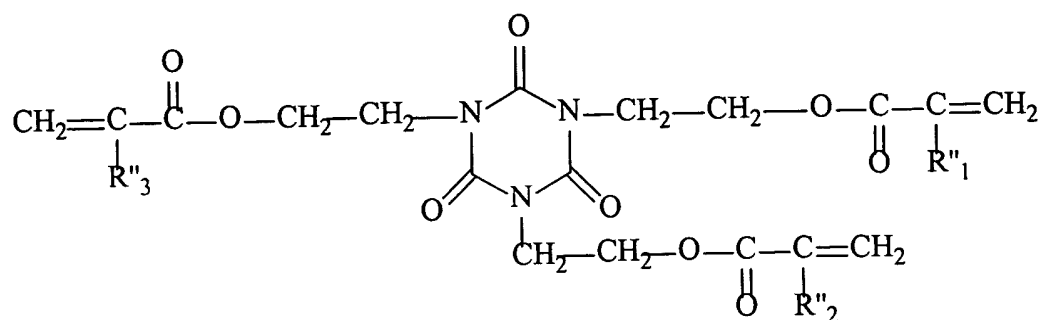
$$CH_2{=}\overset{\displaystyle CH_3}{\overset{|}{C}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-CH_2{-}CH_2-O-\overset{\displaystyle O}{\overset{\|}{C}}-NH-CH_2-\overset{\displaystyle CH_3}{\underset{\displaystyle R'_3}{\overset{|}{\underset{|}{C}}}}-CH_2$$

$$CH_2{=}\overset{\displaystyle CH_3}{\overset{|}{C}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-CH_2{-}CH_2-O-\overset{\displaystyle O}{\overset{\|}{C}}-NH-CH_2-CH_2-\underset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}-R'_4$$

wherein R'_3 and R'_4 represent, independently from one another, H or CH_2.

10.   The composition of claim 6, wherein, in the monomer formula (II), Q represents a trivalent moiety of formula:

11.   The composition of claim 10, wherein the monomer (II) has the following formula:

$$CH_2{=}C{-}\overset{\overset{\displaystyle O}{\|}}{C}{-}O{-}CH_2{-}CH_2{-}N\underset{\underset{\displaystyle \overset{|}{CH_2}{-}CH_2{-}O{-}\underset{\overset{|}{R''_2}}{\overset{\overset{\displaystyle O}{\|}}{C}}{-}C{=}CH_2}{}}{\overset{\displaystyle \overset{\displaystyle O}{\|}}{\underset{\displaystyle \triangle}{}}}N{-}CH_2{-}CH_2{-}O{-}\underset{\overset{|}{R''_1}}{\overset{\overset{\displaystyle O}{\|}}{C}}{-}C{=}CH_2$$

wherein R"$_1$, R"$_2$, and R"$_3$ represent, independently from each other, H or CH$_3$.

12.   The composition of claim 1, further defined as comprising 30 to 40 parts by weight of monomer (II).
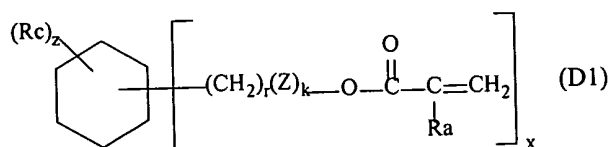
13.   The composition of claim 1, wherein the monomer (III) with a high Abbe number comprises at least one non aromatic cyclic or polycyclic hydrocarbon moiety.

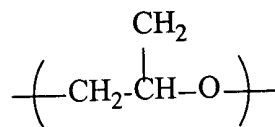14.   The composition of claim 13, wherein the monomer (III) has a formula of:

 (B1)

 (A1)

(C1)

or

(D1)
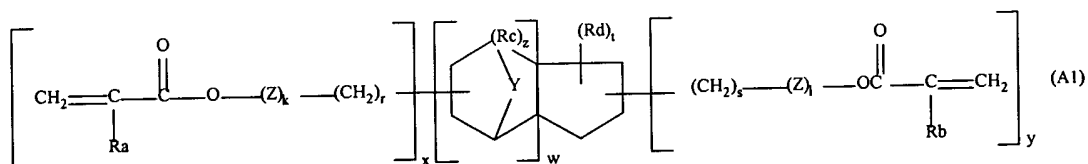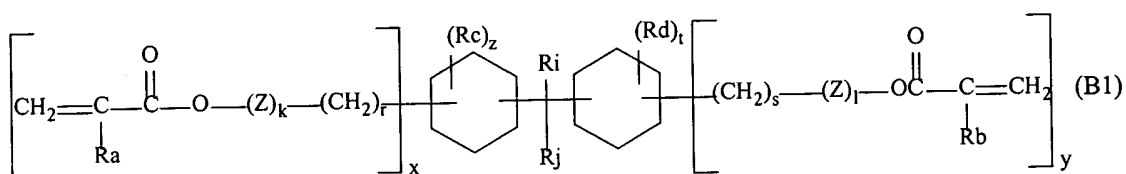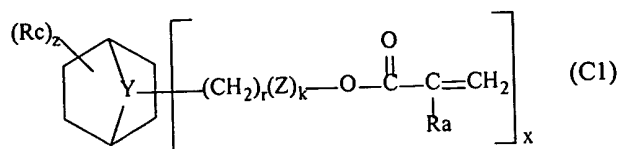
wherein:

Y is a divalent moiety selected amongst $-O-$, $-CH3)2-$, $-C(H)(CH3)-$,

Z is a divalent moiety selected amongst $-(CH2)p-0-$, p being an integer from 1 to 4, and

R_a, R_b represent H or CH_3, R_c, R_d represent, independently from one another, a straight or a branched alkyl moiety, having from 1 to 6 carbon atoms,

R_i, R_j represent, independently from one another, a straight or a branched alkyl moiety, having from 1 to 10 carbon atoms,
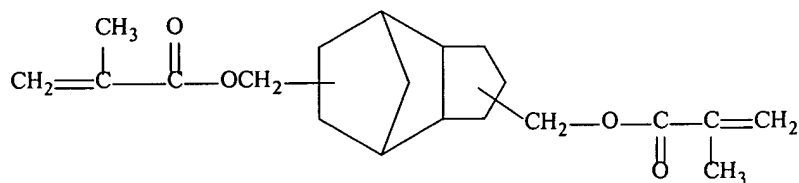
w is an integer of 1 to 3, x is an integer of 0 to 3, y is an integer of 0 to 3, providing that x + y is equal to or higher than 1, k is an integer of 0 to 6, 1 is an integer of 0 to 6, r is an integer of 0 to 6, s is an integer of 0 to 6, z is an integer of 0 to 3 and t is an integer of 0 to 3.

15. The composition of claim 14, wherein the monomer (III) has a formula of:

$$CH_2=\underset{\underset{CH_3}{|}}{C}-\underset{\underset{O}{\|}}{C}-O-$$
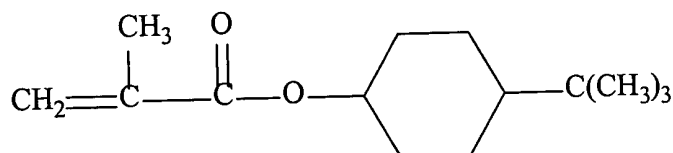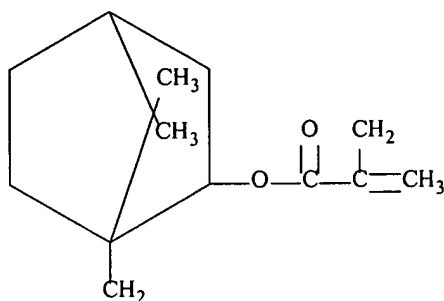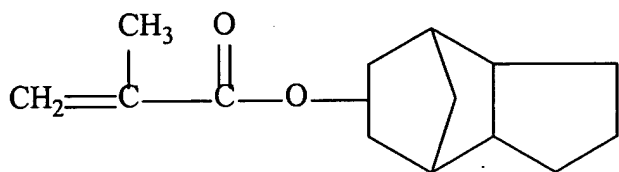
or

16.   The composition of claim 1, further defined as comprising from 10 to 30 parts by weight of monomer (III).

17.   The composition of claim 1, wherein the monomers (II) and (III) each provide, through homopolymerization, a homopolymer with a refraction index lower than or equal to 1.54.

18.   The composition of claim 1, further defined as comprising one or more monomers (IV) polymerizable by radical mechanism and that are different from the monomers (I), (II) and (III), in a proportion of 0 to 40% by weight based on the total weight of monomers (I), (II) and (III).

19.   The composition of claim 1, wherein the monomer (IV) is such that its homopolymer has a refraction index lower than or equal to 1.54.

20.   The composition of claim 1, further defined as having a viscosity lower than or equal to 0.3 Pa.s.

21.   A transparent polymer substrate with a refraction index varying between 1.48 and 1.52, characterized in that it is obtained through polymerization of the composition of claim 1.

22.   An optical lens comprising a polymer substrate of claim 21.

23.   The optical lens of claim 22, further defined as an ophthalmic lens.

24.   The optical lens of claim 23, wherein the lens comprises glass.

25.   The method of claim 8, wherein X represents a straight or a branched divalent alkyl chain having from 1 to 12 carbon atoms.

26.   The method of claim 25, wherein X represents a straight or a branched divalent alkyl chain having from 1 to 5 carbon atoms.

27.   The method of claim 25, wherein X represents a straight or a branched divalent alkyl chain having from 8 to 12 carbon atoms.

APPENDIX A

Claim Amendments

2.   (Amended) [A composition according to] The composition of claim 1, characterized in that, in the monomer formula (I), said divalent A represents:

$$\left(CH_2\text{-}\underset{\underset{CH_3}{|}}{CH}\text{-}O\right)_{m2}$$
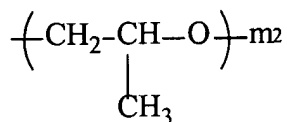
m2 being defined in claim 1.

3.   (Amended) [A composition according to claims 1 or 2, characterized in that it comprises] The composition of claim 1, further defined as comprising from 40 to 60 parts by weight of monomers (I) and m_1 and m_2 are integers from 5 to 10.

4.   (Amended) [A composition according to any one of the preceding claims, characterized in that] The composition of claim 1, wherein the monomer (II) is a urethane di(meth)acrylate oligomer.
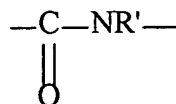
5.   (Amended) [A composition according to claim 4, characterized in that said] The composition of claim 4, wherein the urethane di(meth)acrylate oligomer is further defined as an alphatic polyester.

6.   (Amended) [A composition according to any one of claims 1 to 3, characterized by] The composition of claim 1, wherein the monomer (II) has the [following] formula:
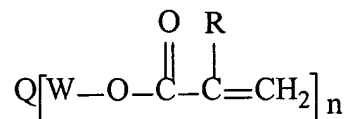
$$Q\left[W\text{—}O\text{—}\underset{\underset{}{\overset{\overset{O}{\|}}{C}}}{}\text{—}\underset{\underset{}{\overset{\overset{R}{|}}{C}}}{}=CH_2\right]_n$$

wherein:

      Q is a moiety of a valence n, with a straight, branched or cyclic structure, comprising at least two units of formula:

$$-\overset{\displaystyle O}{\underset{\displaystyle \|}{C}}-NR'-$$

W is a divalent alkyl moiety, with a straight or branched structure, containing from 1 to 5 carbon atoms,
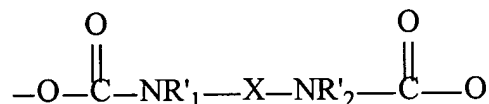
n varies from 2 to 4,

R represents H or CH_3, and

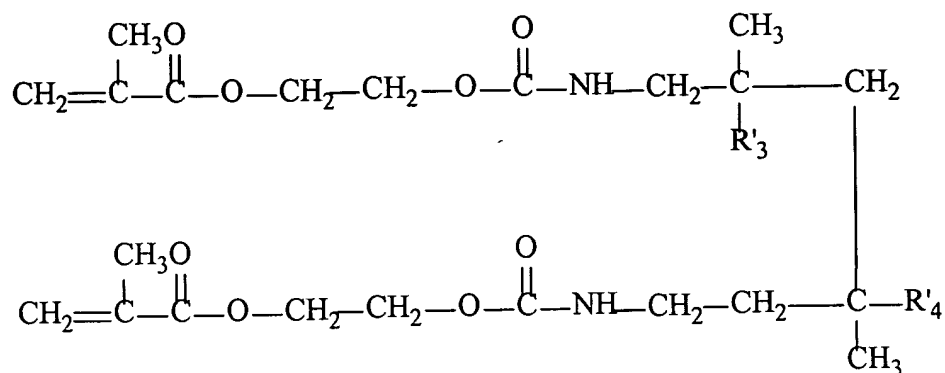R^1 represents H or a valence link.

7.   (Amended) [A composition according to claim 6, characterized in that] <u>The composition of claim 6, wherein</u> W represents the $-CH_2CH_2-$ moiety.

8.   (Amended)   [A composition according to claim 6 or 7, characterized in that] <u>The composition of claim 6, wherein</u>, in the monomer formula (II), the Q moiety is a divalent moiety having the following formula:

$$-O-\overset{\displaystyle O}{\underset{\displaystyle \|}{C}}-NR'_1-X-NR'_2-\overset{\displaystyle O}{\underset{\displaystyle \|}{C}}-O$$

wherein X represents a straight or a branched divalent alkyl chain [having from 1 to 5 carbon atoms, preferably from 8 to 12 carbon atoms], and R'_1 and R'_2 independent from one another represent H or CH_2.

9.   (Amended) [A composition according to claim 8, characterized in that] <u>The composition of claim 8, wherein</u> the monomer (II) has the following formula:

$$CH_2\!\!=\!\!\underset{\underset{CH_3}{|}}{C}\!-\!\underset{\underset{}{\overset{\overset{O}{\|}}{C}}}\!-\!O\!-\!CH_2\!\!-\!CH_2\!-\!O\!-\!\underset{\overset{\overset{O}{\|}}{}}{C}\!-\!NH\!-\!CH_2\!-\!\underset{\underset{R'_3}{|}}{\overset{\overset{CH_3}{|}}{C}}\!\!-\!\!\!-\!CH_2$$

$$CH_2\!\!=\!\!\underset{\underset{CH_3}{|}}{C}\!-\!\underset{\overset{\overset{O}{\|}}{}}{C}\!-\!O\!-\!CH_2\!-\!CH_2\!-\!O\!-\!\underset{\overset{\overset{O}{\|}}{}}{C}\!-\!NH\!-\!CH_2\!-\!CH_2\!-\!\!\!-\!\underset{\underset{CH_3}{|}}{C}\!-\!R'_4$$
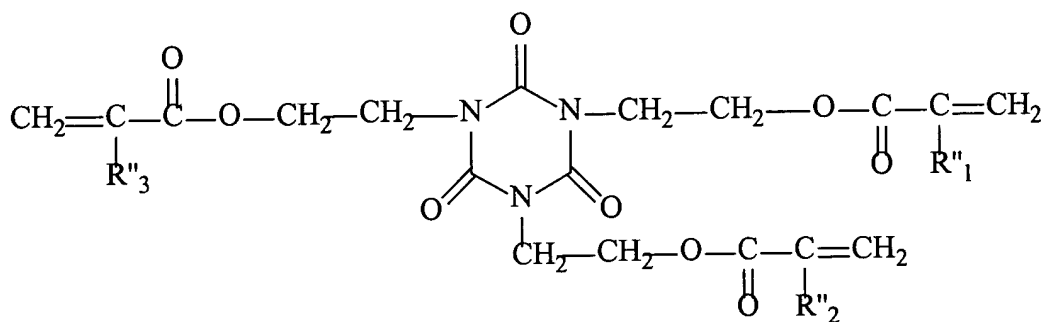
wherein R'₃ and R'₄ represent, independently from one another, H or CH_2.

10.   (Amended) [A composition according to claim 6 or 7, characterized in that] <u>The</u> <u>composition of claim 6, wherein,</u> in the monomer formula (II), Q represents a trivalent moiety of
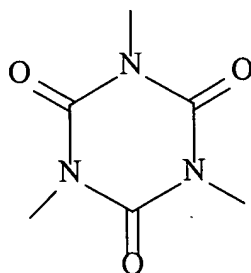
formula:

11.   (Amended)   [A composition according to claim 10, characterized in that] <u>The</u> <u>composition of claim 10, wherein</u> the monomer (II) has the following formula:
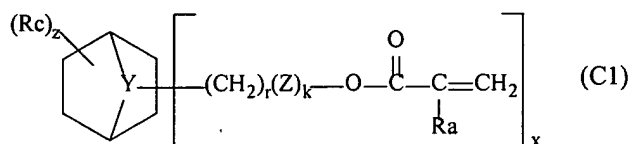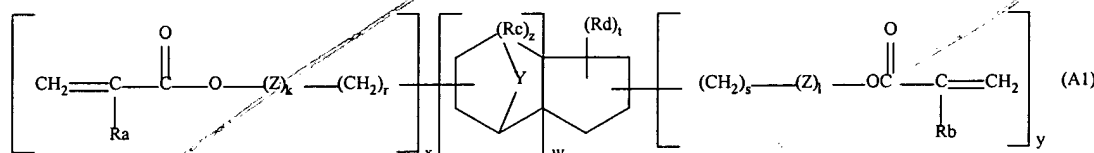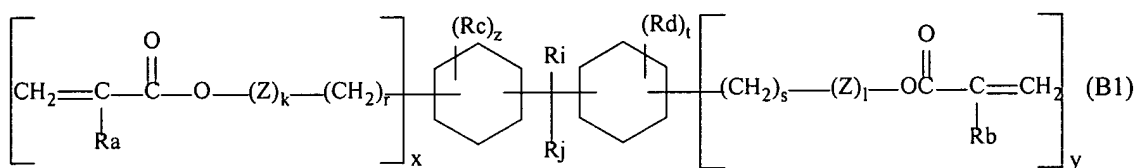

wherein R"₁, R"₂, and R"₃ represent, independently from each other, H or CH_3.
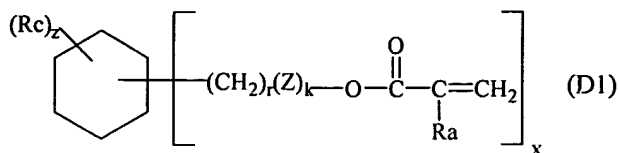
12. [A composition according to any one of the preceding claims, characterized in that it comprises] The composition of claim 1, further defined as comprising 30 to 40 parts by weight of monomer (II).

13. (Amended) [A composition according to any one of the preceding claims, characterized in that] The composition of claim 1, wherein the monomer (III) with a high Abbe number comprises at least one non aromatic cyclic or polycyclic hydrocarbon moiety.

14. (Amended) [A composition according to claim 13, characterized in that the monomer (III) is selected amongst at least one of the monomers of the following formulae:] The composition of claim 13, wherein the monomer (III) has a formula of:

$$\left[CH_2=C(Ra)-\overset{O}{\overset{\|}{C}}-O-(Z)_k-(CH_2)_r-\right]_x \left[\text{(Rc)}_z \overset{Ri}{\underset{Rj}{\bigcirc\!\bigcirc}} \text{(Rd)}_t\right] \left[-(CH_2)_s-(Z)_l-O\overset{O}{\overset{\|}{C}}-C(Rb)=CH_2\right]_y \quad (B1)$$

$$\left[CH_2=C(Ra)-\overset{O}{\overset{\|}{C}}-O-(Z)_k-(CH_2)_r-\right]_x \left[\overset{\text{(Rc)}_z}{\underset{w}{\bigcirc\!Y\!\bigcirc}}\text{(Rd)}_t\right] \left[-(CH_2)_s-(Z)_l-O\overset{O}{\overset{\|}{C}}-C(Rb)=CH_2\right]_y \quad (A1)$$

$$\text{(Rc)}_z\!\!-\!\!Y\!\!\left[-(CH_2)_r(Z)_k-O-\overset{O}{\overset{\|}{C}}-C(Ra)=CH_2\right]_x \quad (C1)$$

or

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(D1)

wherein:

Y is a divalent moiety selected amongst –0-, -CH3)2-, -C(H)(CH3)-,

Z is a divalent moiety selected amongst –(CH2)p-0-, p being an integer from 1 to 4, and

R_a, R_b represent H or CH_3, R_c, R_d represent, independently from one another, a straight or a branched alkyl moiety, having from 1 to 6 carbon atoms,

R_i, R_j represent, independently from one another, a straight or a branched alkyl moiety, having from 1 to 10 carbon atoms,

w is an integer of 1 to 3, x is an integer of 0 to 3, y is an integer of 0 to 3, providing that x + y is equal to or higher than 1, k is an integer of 0 to 6, 1 is an integer of 0 to 6, r is an integer of 0 to 6, s is an integer of 0 to 6, z is an integer of 0 to 3 and t is an integer of 0 to 3.

15.   (Amended)   [A composition according to claim 14, characterized in that the monomer (III) is selected amongst the monomers of formulae:] The composition of claim 14, wherein the monomer (III) has a formula of:

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or

CH₃ O
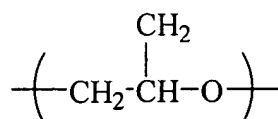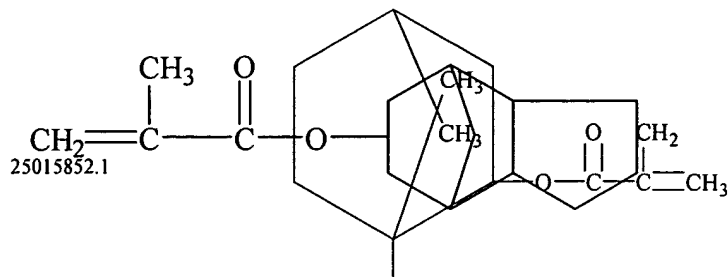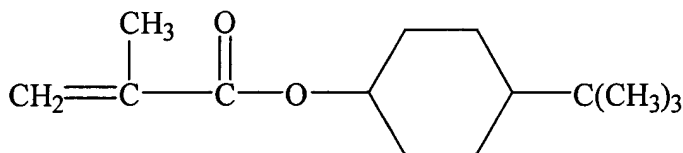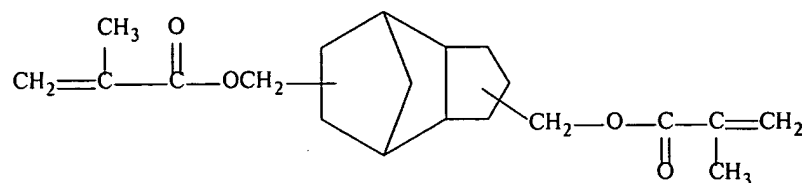CH₂=C—C—OCH₂—[bicyclic structure]—CH₂—O—C—C=CH₂

$$CH_2{=}\underset{\underset{}{\overset{|}{C}}}{\overset{\overset{CH_3}{|}}{}}\text{—}\underset{\overset{\|}{O}}{\overset{\overset{O}{\|}}{C}}\text{—}OCH_2\text{—}[\text{bicyclic ring}]\text{—}CH_2\text{—}O\text{—}\underset{\overset{\|}{O}}{C}\text{—}\underset{\overset{|}{CH_3}}{C}{=}CH_2$$

16.   (Amended) [A composition according to any one of the preceding claims, characterized in that it comprises] The composition of claim 1, further defined as comprising from 10 to 30 parts by weight of monomer (III).

17.   (Amended) [A composition according to any one of the preceding claims, characterized in that] The composition of claim 1, wherein the monomers (II) and (III) each provide, through homopolymerization, a homopolymer with a refraction index lower than or equal to 1.54.

18.   (Amended) [A composition according to any one of the preceding claims, characterized in that it comprises] The composition of claim 1, further defined as comprising one or more monomers (IV) polymerizable by radical mechanism and that are different from the monomers (I), (II) and (III), in a proportion of 0 to 40% by weight based on the total weight of monomers (I), (II) and (III).

19.   (Amended) [A composition according to any one of the preceding claims, characterized in that] The composition of claim 1, wherein the monomer (IV) is such that its homopolymer has a refraction index lower than or equal to 1.54.

20.   (Amended) [A composition according to any one of the preceding claims, characterized in that it has] The composition of claim 1, further defined as having a viscosity lower than or equal to 0.3 Pa.s.

21.   (Amended)   A transparent polymer substrate with a refraction index varying between 1.48 and 1.52, characterized in that it is obtained through polymerization of [a] the composition [according to any one of the preceding claims] of claim 1.

22.   (Amended) An optical lens comprising a polymer substrate [according to] of claim 21.

23.   (Amended) [An optical lens according to claim 22, characterized in that the lens is] The optical lens of claim 22, further defined as an ophthalmic lens.

24.   (Amended) [An optical lens according to claim 23, characterized in that] The optical lens of claim 23, wherein the lens [is a] comprises glass.

25.   (New) The method of claim 8, wherein X represents a straight or a branched divalent alkyl chain having from 1 to 12 carbon atoms.

26.   (New) The method of claim 25, wherein X represents a straight or a branched divalent alkyl chain having from 1 to 5 carbon atoms.

27.   (New) The method of claim 25, wherein X represents a straight or a branched divalent alkyl chain having from 8 to 12 carbon atoms.